HOMOGENEOUS CHARGE COMPRESSION IGNITION CONTROL UTILIZING PLASMATRON FUEL CONVERTER TECHNOLOGY

Abstract of the Disclosure

A method and apparatus for operation of an internal combustion engine running under a homogeneous charge compression ignition (HCCI) mode with fuel partially reformed by an onboard fuel reformer. In one embodiment, the onboard fuel reformer is a plasmatron fuel converter. The temperature and composition of the gaseous charge into the cylinders of the engine can be adjusted by mixing the charge into the cylinder (which contains air, exhaust gas and/or unreformed fuel) with hydrogen rich gas from the onboard reformer. The fuel reformer transforms the fuel to a mixture of hydrogen, CO and other light hydrocarbons. By adjusting operation in the reformer, the composition of the reformate can be altered. In addition to thermal management of the cylinder charge, the reformate can be used as a fuel blending agent in order to adjust the octane/cetane number of the air charge and thus control the ignition timing of the overall fuel/air charge to the cylinder.